

CLIMATOLOGICAL DATA FOR AUGUST, 1911.

DISTRICT No. 2, SOUTH ATLANTIC AND EAST GULF STATES.

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GENERAL SUMMARY.

It is well known that the broad expanse of the Caribbean Sea and the warmer parts of the adjacent Atlantic Ocean are the breeding places of subtropical storms or hurricanes which sometimes reach the Gulf or south Atlantic coasts with devastating force. Forming over the smooth surface of the oceans they are symmetrically developed and of great force though of small diameter, but they are often unable to maintain their strength over a land surface; hence in passing from the ocean to the land their energy is often rapidly dissipated. Such was the case with the two disturbances that entered the area of District No. 2 during August, 1911. Both were cyclonic storms of small diameter but of intense energy and both after entering the coast line rapidly lost power and drifted slowly westward as minor barometric depressions accompanied only by more or less general rains.

The first storm entered the Gulf coast west of Pensacola, Fla., on the morning of August 11, and at 7 p. m. was central between Mobile and Pensacola, with a pressure of 29.73 inches at Pensacola. These cities are about 55 miles apart. At Pensacola the wind reached a maximum velocity of 80 miles an hour from the southeast and considerable damage was done to property in the city and harbor; at Mobile, however, the maximum velocity was but 35 miles an hour and no damage was reported.

The second storm, by far the more severe and disastrous, entered the Atlantic coast between Savannah, Ga., and Charleston, S. C., on Sunday, August 27, giving a pressure of 29.02 inches at Savannah and 29.30 inches at Charleston. The distance between these cities is about 75 miles. The winds attained hurricane violence at both points, and wind and water wrought an immense amount of damage in the coast regions of Georgia and South Carolina. Twenty-five lives were lost and the damage to property is estimated at over a million dollars. The storm then drifted slowly westward over central Georgia, losing force but accompanied by heavy rains that caused much damage to railways, farm lands, and crops, especially in southeastern Georgia.

Aside from these untoward features, August, 1911, presented more nearly normal conditions than have been experienced for several months. The temperature was moderately above normal in the States from Georgia to Virginia and moderately below normal in the States bordering the Gulf. Although maximum temperatures reached 100° or above in all sections, the periods of continuous heat were generally of short duration. In the southern portion of the district the warmest weather occurred toward the close of the first decade, but in the north it was delayed past the middle of the month. Comparatively cool weather prevailed during the latter half of the month. The extremes of temperature were well within the limits of previous years.

The rainfall for the month was moderately above normal in all sections with the greatest excess in Virginia and Florida, but the distribution was very irregular. Very heavy rains fell on the Georgia and South Carolina coasts, August 27 to 30, and on other dates also some heavy downpours occurred at widely separated stations. On the other hand, certain regions in northern Alabama and in the upper basins of the Chattahoochee and Savannah Rivers continued to suffer from drought during most of the month. The extremes are found in Georgia where 2 stations in the southeastern portion received over 20 inches and 4 in the vicinity of Atlanta less than 2 inches. Excessive rains fell at several stations near the Gulf coast on the 12th to 13th, on the South Atlantic coast on the 27th to 29th, and in the northern portion of the district toward the close of the month. The number of days with appreciable rainfall was above the normal in all sections.

During the first half of the month the atmospheric pressure was moderately above normal, not, however, rising above 30.2 inches; the maximum pressure generally occurred on the 13th, except on the coast of North Carolina and Virginia where the maximum occurred on the 23d. Between these dates a long period of nearly normal pressure prevailed. The lowest atmospheric pressure in the Gulf States occurred on the 11th or 12th in connection with the storm near Pensacola. In the northern portion of the district the lowest pressure was registered on the 18th during the passage of a disturbance over New England. The minimum pressure for the month was noted during the Savannah-Charleston hurricane, Charleston reporting 29.30 inches at 11.50 p. m. August 27 and Savannah 29.02 inches on the morning of the 28th; range for the district 1.18 inches.

TEMPERATURE.

The temperature conditions during August were fairly uniform and not greatly different from the normal. Comparatively few humid or oppressive days occurred and the periods of greatest warmth were of short duration. The average temperature for the district as a whole was nearly normal, but between the States bordering the Gulf coast and those on the Atlantic some contrasts in conditions prevailed. Over the Carolinas and Virginia a moderate excess in monthly mean temperatures occurred which exceeded 2° or 3° at several places in Virginia north of Lynchburg and in the southeast portion, and in North Carolina over western counties. On the other hand, in the Gulf States equally moderate deficiencies were general, attaining the greatest value in northern Alabama and the northern portion of the Mississippi area. At many individual stations in each State in the district the monthly mean temperatures slightly exceeded 80°, but they were below 70° at only 2 points—Hot Springs, Va., and Rock House, N. C.

In the Gulf States as a rule the highest temperatures occurred at the close of the first decade, 7th to 10th, the maxima ranging from 95° to over 100°. In Florida no definite periods of excessive warmth prevailed, the maxima occurring on scattered dates throughout the month. North of Georgia there was a second brief period of excessive heat, culminating on the 17th. In Virginia the most marked positive departures in temperature occurred from the 8th to the 11th. Maximum temperatures of 100° or above occurred at 10 places in North Carolina and at 12 in South Carolina, but at comparatively few places in other States in the district. The lowest temperatures occurred quite generally at the beginning of the third decade, 20th to 24th, but at a few places in Florida the lowest were registered on the 1st, and in Mississippi and Alabama the 30th and 31st were the coolest days of the month. Minimum temperatures generally ranged between 50° and 60°, falling below 50° at but one point in Virginia.

The mean temperature for the entire district was 79.2° and the departure +0.3°. The State averages were very uniform, ranging only from 77° for the Virginia area to 81° for Florida. The highest local monthly mean was 83.4° at Blakely, Ga., and the lowest was 68.7° at Hot Springs, Va. The highest temperature for the district was 105° at Blakely, Ga., on the 7th, and the lowest was 43° on the 20th at Hot Springs, Va.

PRECIPITATION.

The distribution of precipitation for the month was extremely irregular, but more generally abundant over large portions of the district than for many months past, and over limited areas the amounts were very large. All States in the district show an average in excess of the normal except South Carolina, where there was a small deficiency. The State averages ranged quite uniformly between 6 and 6.30 inches, except in Alabama and Florida, where they were 4.94 and 9.01 inches, respectively. As compared with August in previous years since 1892, in Florida the current month was the wettest with three exceptions, namely, in 1898, 1901, and 1905. The small regions of marked deficiency in rainfall are found in northern Alabama, north-central Georgia, and in portions of South Carolina bordering the upper course of the Savannah River, where the amounts received were slightly under 2 inches.

The most important facts with reference to the precipitation for the month are the unusually large amounts for the month at a few individual stations and the heavy local rains produced mainly by the two pronounced atmospheric disturbances to which reference has already been made. Over a considerable area in northern Florida and in a small region just north of Tampa the monthly rainfall exceeded 10 inches at 22 stations, with the maximum amount 17.73 inches at Macclenny, Fla. The rainfall generally exceeded 8 inches in southeastern Georgia, with 4 stations reporting more than 16 inches and 2 over 20 inches. The record for St. George, Ga., 24.17 inches, is with one exception (Fleming, Ga., Aug., 1898, 28.60 inches) the greatest monthly rainfall on record for Georgia during the period 1891 to 1911. A few stations in each of the other States in the district also received over 10 inches. The total at Wilmington, N. C., 13.85 inches, is the largest amount received in August during the past 40 years, excepting August, 1903, when 14.35 inches fell. The large amount at Wilmington, however, was due to heavy downpours on the 4th to 5th and 20th.

RIVER CONDITIONS.

Very heavy rains at points in southern Georgia, particularly in the lower valley of the Ocmulgee River near Lumber City, caused a rapid rise to above the flood stage at that place on the last day of August. The rainfall at Lumber City on the 29th was 4.15 inches and on the 30th 9.37 inches with a river stage of 10.3 feet. Warnings were issued at once by the official in charge of the Weather Bureau office at Macon, Ga., for the Altamaha and lower Ocmulgee Rivers. On August 31 the stage at Lumber City was 17.2 feet (flood stage 15 feet) and considerable damage was done in the vicinity. Bridges were swept away, washouts occurred on the railroads and country roads, and crops were damaged. The loss is estimated at about \$20,000. The river subsided rapidly.

River conditions in other portions of the district presented no features of special interest, except that extremely low mean stages were maintained by all the rivers. In a few cases the mean stages for August, 1911, were the lowest for the month in many years, and at almost every river station the mean stages were below the normal.

MISCELLANEOUS PHENOMENA.

The prevailing direction of the wind was southwest in the Carolinas; south in Virginia, Georgia, and Mississippi; southeast in Florida; and east in Alabama. The wind movement was much greater than usual for August, the average hourly velocity being above 11 miles at Hatteras, Charleston, Savannah, and Pensacola. During the severe storm on the 11th, Pensacola experienced a velocity of 80 miles an hour from the southeast and during the hurricane of August 27-28, Charleston reported 94 miles (estimated maximum 106 miles) from the east and Savannah 88 miles from the northwest. The average number of clear days for the district was 12, partly cloudy days 11, cloudy days 8, and days with appreciable rainfall 12. Thunderstorms were numerous but generally of moderate force and there was very little hail. One man was killed by lightning at St. Petersburg, Fla., on August 9.

A waterspout of unusually large dimensions was reported by Capt. I. K. Chichester of the Clyde Line steamer *Arapahoe* to have been observed off Cape Romain, S. C., on Sunday morning, August 20, at 8.30 a. m.

THE SMALL HURRICANE OF AUGUST 11-12, 1911, AT PENSACOLA, FLA.

By W. F. REED, Jr., observer, Weather Bureau.

On the morning of August 9, 1911, a moderate atmospheric depression was evident in the east Gulf which, advancing slowly northward, appeared as a distinct disturbance between Burwood, near the mouth of the Mississippi River, and Pensacola on the morning of the 11th. The atmospheric pressure at Pensacola fell slowly from 29.95 inches at 11 a. m. to 29.73 inches at 5 p. m., the lowest pressure attained, and the 7 p. m. weather map revealed that the storm was then central between Pensacola and Mobile, with pressures of 29.78 and 29.75 inches, respectively, while the pressure at stations to the northeast was over 30.1 inches, giving a fairly steep gradient. Southeast storm warnings were displayed at 3 p. m. at Pensacola.

Moderate northeast winds prevailed to 1 p. m.; the wind shifted to southeast at 3.45 p. m., increasing in

